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METALLIC FURNITURE

BY M. S. KELLEY.

AN AMERICAN PRODUCT THAT MINIMIZES INTERIOR
FIRE HAZARDS—ITS CHIEF USES, ITS
PROPER INSTALLATION.

BACK in the early 80's a newspaper publisher in Wisconsin, having some rather valuable papers to file away, conceived that it would show horse sense to have cases made for them of metal rather than wood. From that idea has grown the metallic furniture business of today. Now an established industry, it is but a generation old, having started from an embryo plant in 1884. The business has grown steadily since that time, its present yearly product being counted in the millions, with a corresponding advance in the quality of the work and the variety of goods manufactured. It is peculiarly an American product, nothing approaching the lines made here being manufactured abroad, though some features of it have been attempted in other countries, notably in Germany. The industry, however, is essentially a new one, with possibilities as yet little understood, and with uses that must be fully studied before they can be adequately utilized. Incombustible furnishings have a well-defined place in the scheme for producing a really fireproof building, and without them such a structure will never be entirely attained. The correct use of metallic furniture is postulated on a clearly defined theory, and that is—a properly prepared place in

which to use it. In short, utilized to its fullest extent, it is employed less as a protection against fire than as a means of preventing fire. "No starting point for fire" was the basic conception of its use, and that is the idea underlying its widest employment today. Metallic fittings should not be so used as to be exposed to hazards that properly should be met by structural conditions. The product is distinctly fire-resisting rather than fireproof, a fact that should be kept clearly in mind in planning for its employment. That it does possess the quality of individual protection to a large degree is abundantly witnessed by the repeated instances of security afforded by it under severe tests. Its true function, however, as stated, is the complete elimination of interior fire hazards. Speaking broadly, its possibilities in this direction have as yet been little appreciated, notwithstanding the constantly increasing demand for it. As a whole, architects have made but little study of the problem of reducing interior fire hazards. Up to within the past two years almost nothing on this subject has appeared in architectural or technical journals, the discussion relating to fireproofing having been chiefly confined to structural features. That is somewhat due to the fact that the owner, rather than the architect, has often passed upon the matter of equipment. Primarily, however, the question is one for the latter, since incombustible furnishings are best used only where structural provision has been made for their introduction. Planning corporation buildings so that certain suites containing important departments shall be set apart and made thoroughly fireproof, all with proper consideration for extra weights on floors, suitable fire-stopped openings, etc., is a case in point. With a growing willingness among owners to meet the additional expense involved in securing interior protection, a wider study is being made by all concerned. The subject is one warranting the most serious consideration, and peculiarly demanding the hardest of hard sense.

WHERE DO METALLIC FURNISHINGS STAND AMONG UNDERWRITERS?

Practically they have no standing at present. The rate committee of the New York Fire Insurance Exchange through the territory under its jurisdiction, that is, Manhattan and surrounding territory, has made an allowance of 5 per cent for fireproof mercantile buildings equipped with incombustible furnishings. It is believed



BURNING OF THE IOWA STATE CAPITOL, JANUARY 4, 1904.

This means WOOD! Such an interior fire should be impossible in a Public Building.

that this is the only recognition the product has obtained from underwriters. This fact, in itself, illustrates the comparative newness of the work. With its wider employment and with an understanding of the immense decrease of interior fire hazards made possible by its use, will undoubtedly come a corresponding reduction in insurance rates where it is properly installed. The subject will eventually demand the serious consideration of underwriters, but it will first have to be presented to them by architects and property owners in tangible form. Given a fireproof department-store building, with exterior openings fully equipped to meet exterior exposure hazards, the interior properly separated by dividing walls, with fireproof doors, and the whole equipped with incombustible showcases, counters, shelving, furniture and fixtures—what reductions will be offered as against the firetraps of today?

Such a proposition might have seemed visionary ten years ago. Metallic furniture has made it reasonable today. That product offers a substitute for wood in all forms, acceptable both from the standpoint of utility and good taste. Such proposals are of moment, since they involve not only the hazard of fire but also that of life; for, in such an example as that quoted above—a great de-

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partment store—is found a menace to life only too real. Immense in area, open from end to end, with great light-shafts and elevator-wells providing perfect flues, filled with inflammable materials stored on miles of wooden shelves—would not a sudden outburst of fire seriously jeopardize the safety of the hundreds of young people employed? Incombustible fittings offer only one means of lessening such danger, but their value in this direction is undeniable. Their considerable adoption in merchandising establishments will be largely dependent upon the recognition they receive from insurance companies. Commercial fireproofing is, of course, largely a question of economics.

WHAT ARE THE CHIEF USES OF METALLIC FURNITURE?

More than in any other direction, metallic furniture has secured recognition in the equipment of public buildings. For the safeguarding of public records it is, of course, invaluable. But it is also being increasingly used to meet the demand that a public building be a fireproof building—fireproof in fact as well as name. It is supplanting wood in these buildings, in all forms: counters, partitions, desks, tables; in fact, providing for the complete equipment of them. In this it is backed by a solid public spirit. In Massachusetts the law prohibits the use of any combustible materials whatever in rooms used for public records. A similar sentiment is growing everywhere. Woodwork in any public building will eventually be an anomaly. The taxpayer who sees his court house or city hall gutted by fire, with records destroyed or jeopardized, public business interrupted, and a large financial loss entailed, will hold that architect and officials have handed him a gold brick—and act accordingly.

The very large growth, together with the consolidation of many important banks and corporations, has greatly increased the demand for metallic furniture. This is particularly true of metropolitan banks, where the volume of books and records is so great as to make it impossible to longer store them in book-vaults. The use of the latter is therefore being more and more restricted to securities and attendant records, with the great mass of books and papers provided for in metallic desks and casework under counters. This means that if anything like security is to be attained, all the surrounding fittings must be non-inflammable; in short, complete non-burning



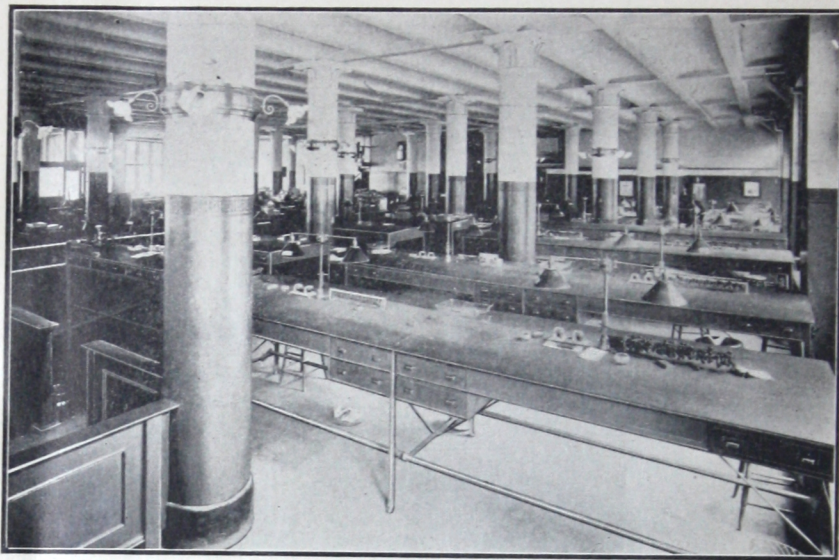
PORTION OF BANKING-ROOM AT WASHINGTON, PA.

Entirely equipped with Metallic Furniture and Fixtures. No wooden furniture in this room except chairs.

equipments. The increased demand in this direction among banks has been really remarkable, and affords a most significant illustration of how the product has cut into wooden lines. Partitions, coupon-booths, wardrobes, and the many fittings in which large amounts of wood were formerly assembled, are now being replaced by metal. Probably the demand in this direction has increased ten-fold in as many years.

For ordinary commercial counting-rooms metallic furniture has been more slowly adopted. The advantage presented by its use in banking-rooms has, however, led to its considerable employment by business houses. These adoptions are due not to lower insurance rates but primarily to diminish interior fire risks, with attendant possible interruptions to trade, loss of business records, etc. The durability of the product, its sanitary qualities, and its resistance to atmospheric changes have influenced its selection.

The wide erection of so-called fireproof office buildings has led to a demand for a special class of this work; that is, metallic cabinets suited to withstand the small fires ordinarily looked for in these structures. Here the material is employed outside of its normal



COUNTING-ROOM OF HIBBARD, SPENCER & BARTLETT, CHICAGO.
Size 130 feet x 126 feet. Completely furnished with Metallic Furniture,
Counters, Partitions, etc., throughout.

province for fire prevention, and is used directly for protection. The work has, however, a distinct and proper use here, where introduced in small offices with restricted fire areas. Isolated metallic cabinets, containing documents and letters, have thoroughly demonstrated their ability to protect their contents in small fires that have completely consumed all the surrounding wooden furniture and cases. Recommendations have appeared in print from time to time, urging that only metallic furniture be used in fireproof office buildings, in order to secure complete immunity from interior fire. Such adoptions, however, can hardly be looked for from any action on the part of the tenants themselves. Metallic furniture costs more than wooden, and tenants, except where they desire specific individual protection, cannot be expected to install it on any co-operative plan. That owners, and eventually municipal regulation within certain zones, will insist on the elimination of wooden partitions, fixed furniture, etc., is entirely probable.

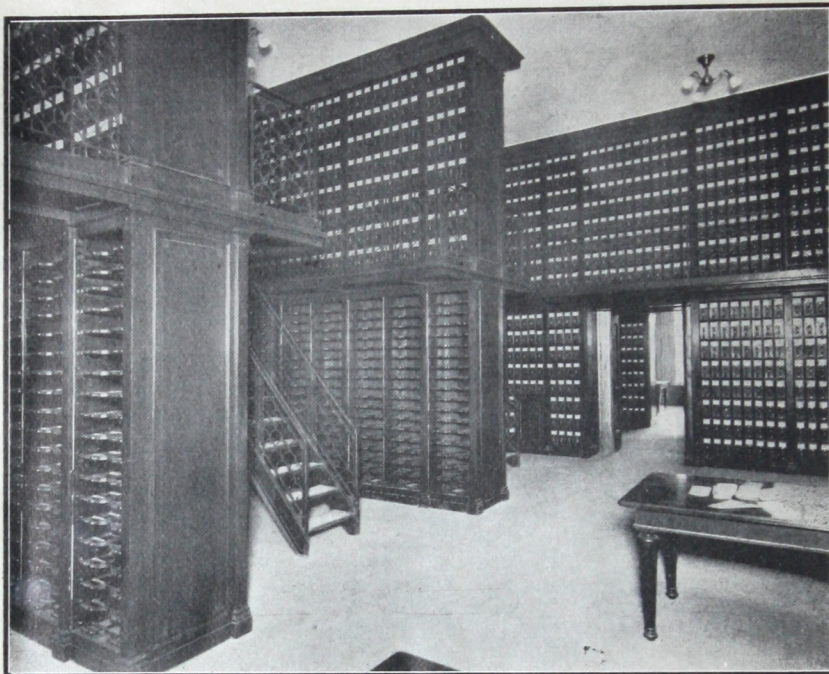
Possibly one day some enterprising owner in New York may undertake the experiment of putting up a first-class fire-resistant Law Building that could be advertised with some degree of truth as

being really fireproof. Built with fire-stopped window openings, non-combustible trim and doors, and rented with a qualification prohibiting the use of wooden furniture, its rental power invites interesting speculation. Every big office fire hits the lawyer, and it is safe to say he would hunt cover if he could find it.

The modern library building offers another conspicuous example of the effective employment of this product. Fifteen years ago the use of metalwork in libraries was almost unknown. Even for shelving it was looked upon with suspicion. Today steel shelving is almost universally specified for the larger buildings. The success attending the use of metal for stackrooms and in kindred capacities rapidly led to an extension of its employment in other parts of library buildings. Charging counters, cabinets for card indexes, periodical cases, tables for reading-rooms, cases for newspaper collections, etc., are being made more and more in incombustible forms. And there is a special fitness in this. Libraries are continually being made the repository of special collections, rare art works and valuable manuscripts, and the necessity for the elimination of highly combustible fittings is evident. The value of a complete non-combustible equipment was signally demonstrated in a fire occurring a few years ago adjacent to the new Law Library in the Philadelphia City Hall. A large amount of scaffolding, etc., temporarily occupying the corridor before the library entrance, took fire during the night. The flames had access to the library-room, which, had it been equipped in wood, would have been gutted. As it was entirely furnished in metal, the fire met an incombustible barrier. Beyond slight damage to decorations, no injury whatever was inflicted upon the library.

Hotels as yet have made little use of metallic furniture, but its considerable adoption by the best of them may undoubtedly be looked for. "Absolutely fireproof" hotels choked with combustible work are absurdities. Particularly are metallic fixtures desirable in the working quarters of hotels; *i. e.*, about kitchens and adjacent apartments, storerooms, locker-rooms, coatrooms, etc., where danger from fire may be naturally looked for.

Hospitals and asylums could, of course, advantageously make use of the product in a manner similar to hotels. The non-absorbent surfaces of metallic work render it particularly desirable for hos-



RECORD-ROOM, COUNTY COURT HOUSE, DETROIT.

Illustrates the correct use of Metallic Furniture. This room is completely protected from exposure fire hazard; has incombustible trim and flooring, and is entirely furnished with Metallic Work.

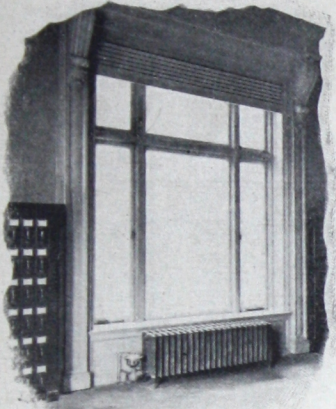
pital equipment. It has already been employed to some extent in this direction, for benches in hospitals, theaters, for locker-rooms, etc.

Though outside the scope of this article, it may be mentioned, at this time, as a matter of interest, that metallic furniture is now being considerably used in the equipment of war-vessels. Two of the Russian warships in the late naval battles in the Yellow Sea, the *Retzivan* and the *Variag*, were completely furnished with steel furniture made in this country.

HOW SHALL METALLIC FURNITURE BE INSTALLED?

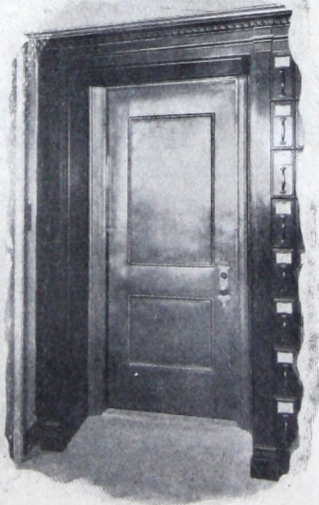
Perhaps how *not* to install it is an equally pertinent question. Two illustrations will best answer both.

The view of the record-room in the new court house at Detroit presents an example of a typically correct employment of metallic equipment. Metalwork is here used solely to abolish interior fire risks. The various record-rooms are united in suites, completely



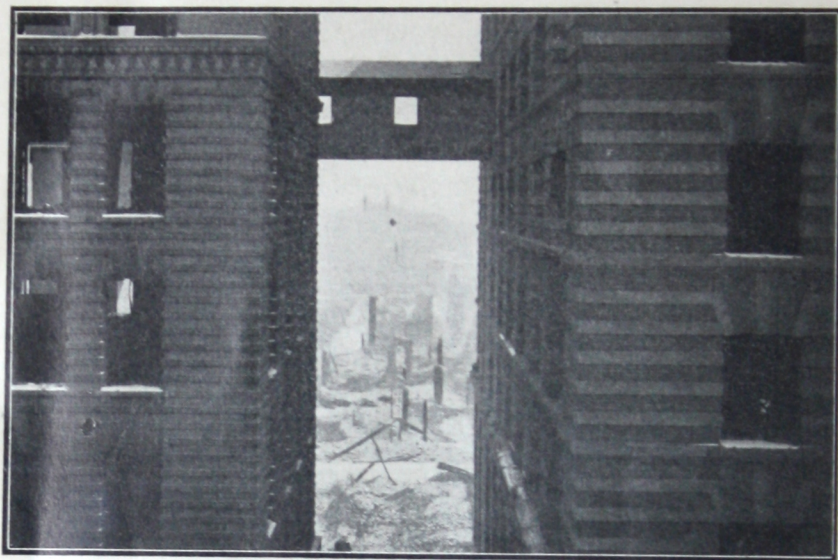
DETROIT COURT HOUSE.

Steel Shutters in Record-Rooms, for Protection against Exposure Hazard. These Shutters are Coiled in Ornamental Boxed Window-Heads.



DETROIT COURT HOUSE.

Steel Fireproof Door and Trim, Record-Rooms, Isolating Fireproof Suites from Halls, etc.



VIEW FROM BALTIMORE COURT HOUSE.

View from window in record-room (shown opposite), showing proximity of the recent fire to rooms largely furnished in wood. The Buildings shown in the foreground (the Equitable and Calvert) acted as party walls, protecting the Court House, though the buildings themselves were completely gutted.

isolated from adjacent rooms and halls by reinforced partitions and adequate fire-doors. Exterior exposure hazard is provided for by heavy steel shutters coiled in ornamental boxed heads over the windows. The floors are tile or marble, the trim Keene cement or hard finish. The furnishings are simply incombustible throughout. Not half flesh and half fowl—all incombustible.

The view of the record-room in the new court house in Baltimore presents a significant contrast to that shown in the Detroit building.

The interior of the Baltimore court house practically escaped all damage in the great conflagration. Was it due wholly to the wisdom of its builders? Apart from its heavy walls and limited window area, its good fortune is attributable to a combination of providential circumstances, rather than to anybody's wisdom or foresight. No more pointed example of the folly of building a great public repository for records *and then filling it with combustible materials open to attack on all sides* has been seen in this country for years.

Two views disclose this; both are taken with the camera prac-



BALTIMORE COURT HOUSE.

Record-room. Counters in foreground of wood, 15 feet away from unprotected windows. This view was made from the same spot as that shown opposite, but looking into the room. Shows records on open iron shelves surrounded by wooden counters, desks, tables, wardrobes, etc, in room having wooden floors, trim and doors, and unprotected windows.

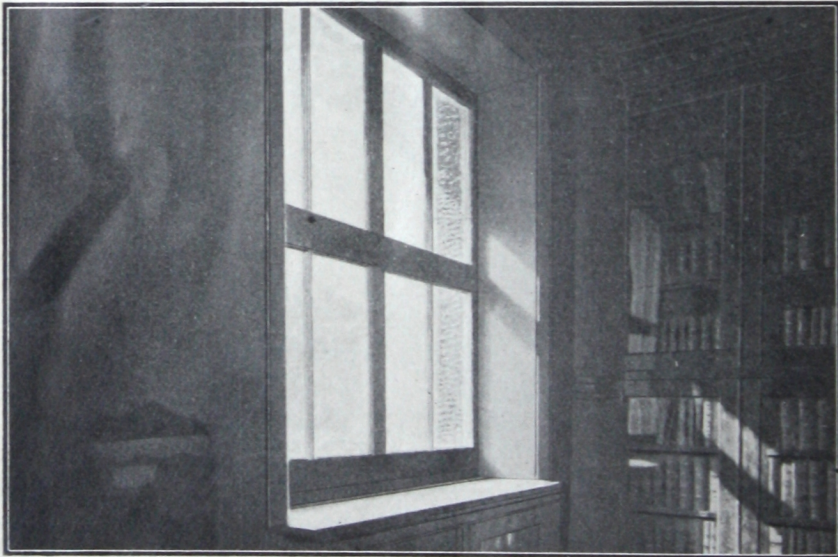
tically at one spot. One view shows how dangerously near the fire was on the outside, the other the condition of a record-room exposed to it. This room contained the recorded deeds of the property owners of Baltimore. These volumes were stored on open iron shelves, and surrounded—by what? By wooden desks, wooden tables, wooden counters, wooden wardrobes, wooden floors, wooden trim, and wooden doors! And to protect these cords of highly varnished oak from a fire that completely gutted a fireproof building 80 feet away there were large sheets of unwired glass set in wooden sashes in wooden frames!

What saved these interiors from complete destruction? A fortunate shift of the wind that drove the fire from them; a series of high, fire-resisting buildings that surrounded the court house and kept the fire away from it, and the heroic work of the firemen and a corps of faithful officials who stood at their posts for hours and fought the flames. Added to this was the fortunate installation, three weeks before the fire, of water curtains over the windows of



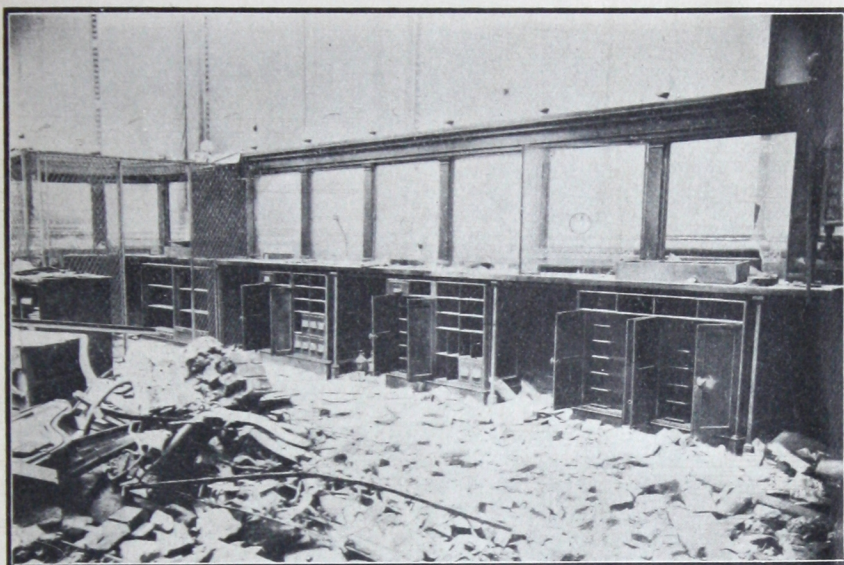
BALTIMORE COURT HOUSE.

Ruins of Law Building in front. Shows the proximity of the fire, on the west, to this Public Building, largely furnished in wood and having unprotected windows.



BALTIMORE COURT HOUSE.

A burned-out window in Law Library fitted with temporary sash. This room was furnished with steel shelving, heavily cased in oak, for harmonious (?) effect.



BANKING-ROOM OF INTERNATIONAL TRUST COMPANY, BALTIMORE,
AFTER THE FIRE.

View shows Metallic Fixtures intact under counters. Room badly damaged by adjoining wall falling through roof of bank. (The distortion noticed is in the photograph, and not in walls or fixtures.)

the O'Neill building, which, meeting the fire at its apex at the corner of Charles and Lexington streets, successfully withstood the flames and prevented their further sweep toward the court house. But for that, to quote the *Engineering Record* of February 20, "the fire would have started on its way up Charles street, after which, when the wind turned, the court house . . . would have been attacked on two sides, and . . . probably would have been gutted. The windows of this building are an excellent example of how to leave a supposedly fireproof preserver of records so as to invite destruction from without."

Considerable amounts of metallic furniture were installed in the record-room shown and in other parts of this building. In themselves, these fixtures, of course, were as fire-resisting as those shown in the Detroit building. Yet the method of their installation, the large amount of woodwork with which they were surrounded, the complete absence of fire-stops anywhere throughout the building, and the entire failure to provide any protection against exterior exposure hazard, practically eliminated their usefulness. A more



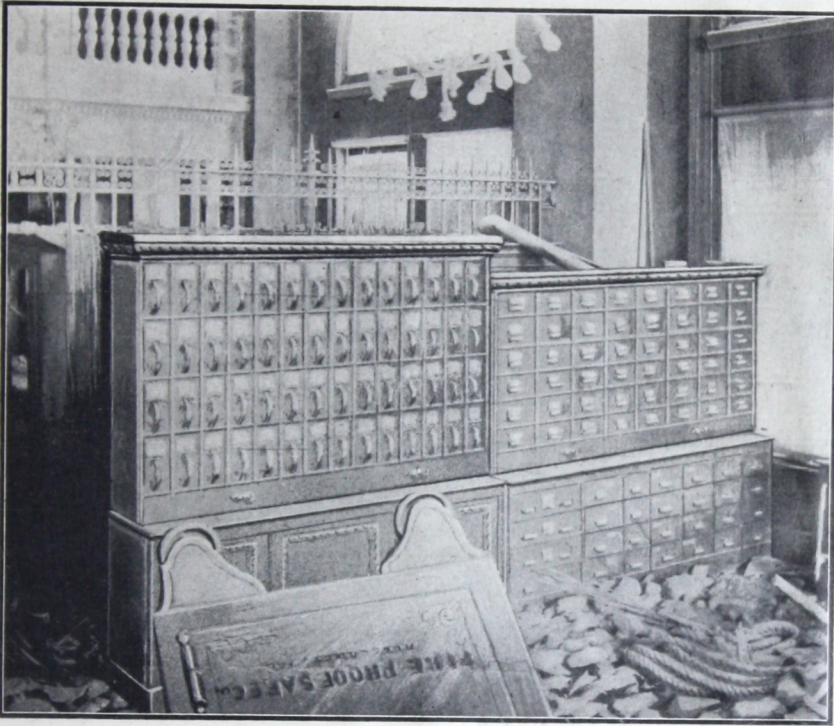
BANKING-ROOM OF THE BALTIMORE GUARANTEE & TRUST COMPANY,
AFTER FIRE.

Four Metallic Cases stand located at X. They completely protected their contents from injury (two illustrations opposite.) The heavy wooden counters and partitions in front of them were destroyed.

pertinent example of the danger of woodwork in a public building could hardly have been afforded. The axiom, "all must be made fireproof or nothing will be fireproof," was completely ignored.

HOW FIREPROOF IS FIREPROOF FURNITURE?

Though a paradox, this is a question frequently met with. As has been pointed out, the distinct province of metallic furniture is to prevent fire, not to withstand it. Metalwork has, however, a well-defined use in fireproof office buildings and in banks for purely protective purposes. What protection will a metallic filing-cabinet afford where an adjacent wooden one is consumed? Some illustrations of the positive degree of protection afforded by the former are here presented. In each of these the surrounding wooden furniture was practically consumed. Metallic cabinets are, however, in no sense safe work, nor calculated to withstand conditions too great to be met by the latter, as in the Baltimore fire. The practicability of the use of isolated metallic casework must be gauged by the surroundings. As against wood, there is always the incontrovertible fact in its favor—it will not burn.



METALLIC CASES IN BANKING-ROOMS OF BALTIMORE GUARANTEE & TRUST COMPANY, INTACT AFTER FIRE.

These are two of the four Cases Located in opposite View at X. These Steel Cabinets were filled with important deeds, mortgages, checks, bank ledgers and paid coupons, all of which were entirely uninjured.

(This view was taken under difficulties, the safe in the foreground having just fallen through six floors.)

CONCLUSIONS.

Summing up, what may be said of some of the probabilities of the adoption of metallic fixtures in the future?

First—Governmental:

(a) That the use of wood or of any combustible material will be prohibited (as already in England and one State at least here) in any room containing public records.

(b) That its use will also later be demanded in the place of wood, entirely, in public buildings.

(c) That eventually municipalities will enforce the adoption of incombustible trim and fixed furniture in new buildings erected within certain zones.



STEEL DESK IN OFFICE OF AMERICAN SHEET STEEL COMPANY,
WELLSVILLE, OHIO, AFTER FIRE.

Contents of desk entirely uninjured. All surrounding wooden furniture, including a cabinet of wooden letter files, practically consumed.

Second—Private Ownership:

(a) That its use will be enforced by property owners offering offices for rental in buildings guaranteed to be really fireproof.

(b) That it will be adopted for use in large areas (as in stores), where the assembling of large masses of woodwork is particularly hazardous to property and life.

Third—Architects:

That the repeated and immense losses by fire will lead to a more careful study of interior fire hazards; the elimination of wood in public buildings; the isolation of suites designed to contain important business records, and their equipment in metal, all entailing a better understanding of the structural conditions requisite to the proper employment of the product.

Fourth—Underwriters:

A more thorough investigation of the value of this material as a means of reducing interior fire hazards, and a more adequate recognition in rates, inviting its use by property owners.